THE CONNECTIVITY OF DOMINATION DOT-CRITICAL GRAPHS WITH NO CRITICAL VERTICES

MICHITAKA FURUYA

Department of Mathematical Information Science,
Tokyo University of Science,
1-3 Kagurazaka, Shinjuku-ku, Tokyo 162-8601, Japan
e-mail: michitaka.furuya@gmail.com

Abstract
An edge of a graph is called dot-critical if its contraction decreases the domination number. A graph is said to be dot-critical if all of its edges are dot-critical. A vertex of a graph is called critical if its deletion decreases the domination number.

In A note on the domination dot-critical graphs, Discrete Appl. Math. 157 (2009) 3743–3745, Chen and Shiu constructed for each even integer $k \geq 4$ infinitely many $k$-dot-critical graphs $G$ with no critical vertices and $\kappa(G) = 1$. In this paper, we refine their result and construct for integers $k \geq 4$ and $l \geq 1$ infinitely many $k$-dot-critical graphs $G$ with no critical vertices, $\kappa(G) = 1$ and $\lambda(G) = l$. Furthermore, we prove that every 3-dot-critical graph with no critical vertices is 3-connected, and it is best possible.

Keywords: dot-critical graph, critical vertex, connectivity.

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References
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